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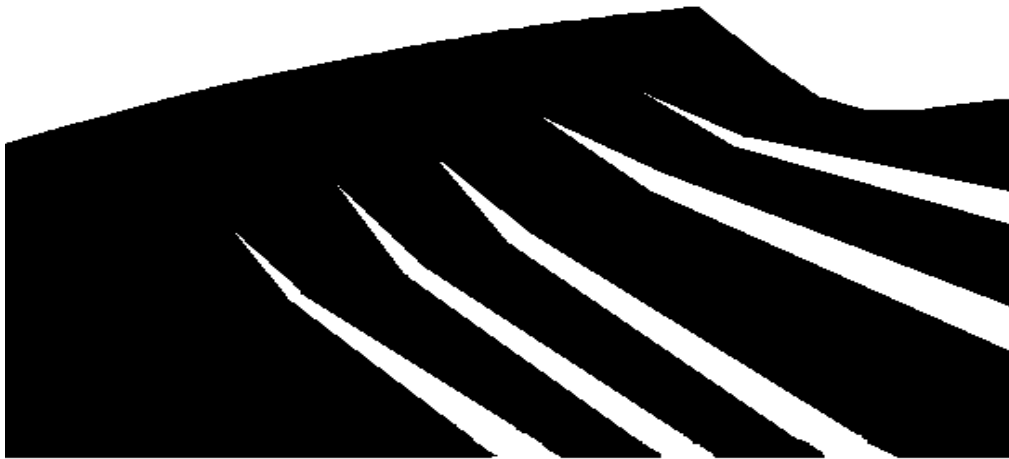
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COLLECTION OF FIELD SAMPLES FOR THE WATER MOVEMENT TEST

LOS ALAMOS QUALITY PROGRAM



APPROVAL FOR RELEASE

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Los Alamos

Yucca Mountain Site

Characterization Project

HISTORY OF REVISION

REVISION NO.	EFFECTIVE DATE	PAGES REVISED	REASON FOR CHANGE
R0	01/09/97	N/A	Initial procedure, supersedes LANL-INC-DP-88

Los Alamos

Yucca Mountain Site
Characterization Project

COLLECTION OF FIELD SAMPLES FOR THE WATER MOVEMENT TEST

1.0 PURPOSE

This detailed technical procedure (DP) describes the procedure for collection of water, soil, rock, mineral and other relevant materials from the field for analysis of characteristics (e.g., moisture content, halide concentrations, chlorine isotopes) relevant to the Water Movement Test task for the Yucca Mountain Site Characterization Project (YMP).

2.0 SCOPE

This DP applies to YMP personnel who collect samples in the field for use in the Water Movement Test task for Los Alamos National Laboratory (LANL).

3.0 REFERENCES

LANL-YMP-QP-02.7, Personnel Training
LANL-YMP-QP-03.5, Documenting Scientific Investigations
LANL-YMP-QP-08.1, Identification and Control of Samples
LANL-YMP-QP-17.6, Records Management
LANL-CST-DP-90, Measurement of Moisture Content of Soil Samples

4.0 DEFINITIONS

4.1 Sample

A sample is a part of a population whose properties are studied to gain information about the whole or group. Examples of samples include surface and subsurface soils, rocks and fluids, drill cores, cuttings, muck, and biota. For Los Alamos purposes, sample is synonymous with specimen.

5.0 RESPONSIBILITIES

The following personnel are responsible for the activities identified in section 6.0 of this procedure:

- YMP personnel performing work to the procedure

6.0 PROCEDURE

The use of this procedure must be controlled as follows:

- If this procedure cannot be implemented as written, YMP personnel should notify appropriate supervision. If it is determined that a portion of the work cannot be accomplished as described in this DP, or would result in an undesirable situation, that portion of the work will be stopped and not resumed until this procedure is modified or replaced by a new document, or until current work practice is documented in accordance with QP-03.5, subsection 6.1.6.
- Employees may use copies of this procedure printed from the controlled document electronic file; however, employees are responsible for assuring that the correct revision of this procedure is used.
- When this procedure becomes obsolete or superseded, it must be destroyed or marked “superseded” to ensure that this document is not used to perform work.

6.1 Principle

Samples are collected for analysis of characteristics such as mineralogy, moisture content, elemental concentrations, and chlorine isotopes, in support of the Water Movement Test.

6.2 Equipment and Hardware/Software

6.2.1 Equipment Malfunction

Standard commercial-grade equipment is used for collection of samples in the field. Moisture samples require collection into airtight containers. The user should inspect each of these items before use to ensure they are in good condition and suitable for their intended use.

6.2.2 Safety Considerations

Applicable Nevada Test Site (NTS), YMP, LANL, and LANL-contractor safety practices for conducting field work are followed, as appropriate.

6.2.3 Special Handling

Care must be taken to minimize any potential for contamination of the sample with the analyte of interest (usually chloride or ^{36}Cl).

6.3 Preparatory Verification

6.3.1 Hold Points

Moisture cans and their lids are weighed and labeled as sets before taking them into the field for sample collection, as required by DP-90.

6.3.2 Calibration

N/A

6.3.3 Environmental Conditions

The field investigator should make note of conditions which might affect the chemical composition of the samples, such as evidence for recent introduction of construction water in underground excavations.

6.4 Control of Samples

Sample identification and control must be sufficient to trace a sample and its derivatives to its original field location, and to ensure that the integrity of the sample be safeguarded at all steps in its collection and subsequent processing. Users must be trained to QP-08.1 before they collect field samples and must follow guidelines set forth in that document for sample control. Sample containers are labeled with unique identifying information (e.g., soil trench identifier and sample depth, or sequence along a specific transect) in a waterproof medium. Sample traceability is also ensured by entering descriptive information about each sample in the field notebook. Samples received at LANL for analysis are controlled following the provisions of QP-08.1.

6.5 Implementing Procedure

Before samples are collected, initial descriptive information is entered in the field notebook as required by QP-03.5 for field activities.

6.5.1 Site Selection

Sampling may be based on statistical criteria (e.g., sampling at fixed intervals) or may be designed to focus on specific features of interest (e.g., fault zones in an underground excavation). The type of sample shall be documented in the field notebook.

6.5.2 Field Collection of Samples

Samples are collected into a suitable container, sealed and labelled. Samples for moisture content determination are placed directly into the tared containers in which they will be analyzed; otherwise, placement into any airtight container is adequate as the samples can be transferred later. YMP personnel will document the method of collection, the field location, sample setting, and traceability to unique identification labels provided by the Sample Management Facility (SMF) as required by QP-08.1.

6.5.3 Sample Size Requirements

Samples to be analyzed for chloride and bromide require up to about 1 kg of soil or rock, or about 10 mL of water. Samples to be analyzed for stable chlorine isotopes and chlorine-36 require the collection of up to about 5 kg of soil or rock material, or about 500 mL of water. Samples collected for moisture content determination require about 200 grams, with smaller sample sizes yielding larger relative errors in moisture content measurements.

6.5.4 Post-Collection Sample Requirements

Samples collected for moisture content determination are stored in a cooler as soon as possible after collection to reduce evaporative losses. Following DP-90, these samples are weighed on a calibrated balance as soon as possible in order to get the initial (wet) weight.

6.6 Data Acquisition and Reduction

The only data acquisition governed by this procedure is the field notebook entry. Information to be recorded is described in section 6.5. No data analysis is involved in this DP. Documentation in notebooks is acceptable if entries meet relevant requirements of QP-03.5.

6.7 Potential Sources of Error and Uncertainties

The most likely sources of error or uncertainty are samples without proper identification or samples that have been improperly stored. In these cases, YMP personnel document the sample condition and suitability for analyses in a notebook.

7.0 RECORDS

Records generated as a result of the proper execution of this DP are entries in field notebooks, which are controlled by QP-03.5 and QP-17.6.

8.0 ACCEPTANCE CRITERIA

The criteria that show that this procedure has been correctly implemented are the records identified in Section 7.0.

9.0 TRAINING

This DP requires read-only training. Training of personnel to this DP is documented pursuant to QP-02.7.

10.0 ATTACHMENTS

N/A